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APPLICATION FOR LETTERS PATENT

Applicant : Tien-Shui WANG

Title : AUTOMOBILE ESCAPE HAMMER GUN

4 Claims

4 Sheets of Drawings

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AUTOMOBILE ESCAPE HAMMER GUN

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to an automobile escape hammer, and more particularly to a gun-shaped automobile escape hammer having a spring-loaded striking hammer to break efficiently and quickly side windows of a vehicle.

2. Description of Related Art

With reference to Fig. 4, an automobile escape hammer is a potential lifesaver in a vehicle crash or car accident as it prevents people being trapped in the vehicle. The automobile escape hammer in accordance with the prior art comprises a body (60), a metal head (61) and a blade (62). The body (60) has a top (not numbered), a grip (601) and a cutter slot (602) defined near the top. The metal head (61) is attached to the body (60) near the top and has a tip (611). The blade (62) is longitudinally mounted and received in the cutter slot (602).

In a situation of a vehicle accident, a user can hold the grip (601) and strike a side window of the vehicle perpendicular to its surface with the tip (611) using a snapping motion to break the window in order to escape from the vehicle. To cut the seatbelt, the user holds the grip (601) of the hammer, pulls the belt taut, and inserts the belt into the cutter slot (602), whereafter the user pulls the blade (62) across the cutter slot (602) to cut off the seatbelt.

However, in an emergency, to strike the window perpendicular to its surface with the tip (601) sometimes is not easy to be achieved due to the shock of the vehicle's occupants etc. A full-strength force is required for the hammer to break the window, otherwise the hammer might not be able to break the window

1 such that the people inside the vehicle cannot escape from the vehicle as quickly
2 as possible. Therefore, the automobile escape hammer in accordance with the
3 prior art is inconvenient in use.

4 Besides, since the seat belt is always tough to cut, the seat belt will easily
5 crinkle or become folded in the cutter slot (602) whereby the seat belt becomes
6 jammed in the cutter slot (602). In such a state, it is almost impossible to cut the
7 seat belt efficiently.

8 To overcome the shortcomings, the present invention provides an
9 automobile hammer gun to mitigate or obviate the aforementioned problems.

10 SUMMARY OF THE INVENTION

11 The main objective of the invention is to provide an automobile hammer
12 gun having a spring-loaded striking hammer to strike efficiently a window of a
13 crashed vehicle to help people inside the vehicle to escape quickly.

14 Other objectives, advantages and novel features of the invention will
15 become more apparent from the following detailed description when taken in
16 conjunction with the accompanying drawings.

17 BRIEF DESCRIPTION OF THE DRAWINGS

18 Fig. 1 is a perspective view of an automobile hammer gun in accordance
19 with the present invention;

20 Fig. 2 is a cross sectional plan view of the automobile hammer gun in Fig.
21 1;

22 Fig. 3 is an operational cross sectional plan view when a lever of the
23 automobile hammer gun is squeezed to move inward a striking hammer; and

24 Fig. 4 is a plan view of an automobile escape hammer in accordance

1 with the prior art.

2 DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

3 With reference to Figs. 1 and 2, an automobile hammer gun in
4 accordance with the present invention comprises a body (10), a striking
5 assembly (not numbered), an illuminating assembly (20) and a cutter assembly
6 (30). The body (10) is hollow and comprises two half shells (not numbered) that
7 connect to each other. The body (10) has an inside (not numbered), a front (not
8 numbered), a rear (not numbered), a top (not numbered), a bottom (not
9 numbered), a grip (101), a lower passage (102), an upper passage (103), a bottom
10 recess (104), a curved slot (105), an inclined guide (106) and a cutter passage
11 (107). The lower and upper passages (102, 103) are respectively formed in the
12 body (10) at the front and are aligned with each other. The bottom recess (104) is
13 defined in the bottom of the body (10). The cutter passage (107) is defined in the
14 bottom near the rear of the body (10). The curved slot (105) is defined in the
15 body (10) between the lower passage (102) and the bottom recess (104). The
16 inclined guide (106) is defined in the bottom of the body (10) and extends toward
17 the rear of the body (10).

18 The striking assembly is mounted in the inside of the body (10) at the
19 front and comprises a striking hammer (11), an adhesive film cutter (12), a
20 compression spring (13) and a lever assembly (not numbered). The striking
21 hammer (11) is cylindrical and moveably mounted in the lower and upper
22 passages (102, 103). The striking hammer (11) further has a bottom tip (111) and
23 an annular lip (112). The bottom tip (111) extends out of the lower passage (102)
24 of the body (10) with a length (not shown). The annular lip (112) is formed

1 outside the lower passage (102) and inside the body (10), and has a bottom (not
2 numbered). The adhesive film cutter (12) is movably mounted in the lower
3 passage (102) and is moved simultaneously with the striking hammer (11). The
4 adhesive film cutter (12) has a triangular blade edge (121) and a slot (122). The
5 triangular blade edge (121) extends out of the lower passage (102) of the body
6 (10) with a length shorter than that of the bottom tip (111). The slot (122) of the
7 adhesive film cutter (12) engages and holds the annular lip (112) of the striking
8 hammer (12), so the adhesive film cutter (12) will be moved in accompaniment
9 with the striking hammer (11).

10 The compression spring (13) is mounted around the striking hammer (11)
11 between the annular lip (112) and the upper passage (103) in the body (10) and
12 has two ends (not numbered) that abut respectively against the annular lip (112)
13 and the body (10). The lever assembly is mounted in the body (10) and
14 comprises a lever (14), a restitution spring (141) and a stationary pin (142). The
15 lever (14) has an inside end (not numbered), an outside end (not numbered) and
16 an elongated hole (140). The inside end of the lever (14) abuts the bottom of the
17 annular lip (112) of the striking hammer (12) to lift the striking hammer (11) to
18 retract inward the body (10). The outside end of the lever (14) extends out of the
19 body (10) and corresponds to the grip (101). The restitution spring (141) is
20 mounted in the body (10) and connects to the lever (14) to provide a restitution
21 force to return the lever (14) when the lever (14) is released. The stationary pin
22 (142) is fixed in the body (10) and is slidably mounted in the elongated hole (140)
23 of the lever (14).

24 The illuminating assembly (20) is mounted on the body (10) and

1 comprises a rotator (21), an illuminating member (22), an adjusting bar (23) and
2 a rotatable switch (24). The rotator (21) is rotatably mounted in the body (10)
3 corresponding to the curved slot (105) and has two flexible casings (not
4 numbered), a circular outer edge (not numbered) and a battery (not shown)
5 inside. The flexible casings connect to each other to contain the battery. The
6 illuminating member (22), such as a light emitting diode (LED), is mounted at
7 the circular outer edge of the rotator (21) and has a first leg (not shown) and a
8 second leg (not shown). The first leg connects electrically to the battery, and the
9 second leg is separated from but corresponds to the battery. More than one
10 illuminating member (22) can be fitted to the hammer. The illuminating member
11 (21) will produce light when the flexible casing of the rotator (21) is pressed to
12 make both the legs of the illuminating member (21) connecting electrically to the
13 battery to activate the illuminating member (21) whereby a user is able to see the
14 area of glass to be struck. The adjusting bar (23) is slidably mounted in the
15 curved slot (105) and has an inside end (not shown) inserted into the curved slot
16 (105) to connect to the rotator (21). Thereafter, the rotator (21) can be rotated by
17 turning the adjusting bar (23) to change an angle of the rotator (21). The rotatable
18 switch (24) is rotatably mounted in the body (10) with threads that correspond to
19 the rotator (21) and has an inside end (not shown) for screwing into the body (10).
20 The rotatable switch (24) can be retracted into or extended out of the body (10).
21 Thereafter, when the rotatable switch (24) is turned to retract into the body (10),
22 the inside end of the rotatable switch (24) will press the flexible casing of the
23 rotator (21) to light the illuminating member (22).

24 The cutter assembly (30) is mounted at the rear of the body (10) and

1 comprises an L-shaped seat belt cutter (31) and a restitution spring (32) with two
2 ends (not numbered). The seat belt cutter (31) has a corner (not numbered), an
3 inside portion (311), an outside portion (312), a curved blade (313) and a spring
4 hole (314). The inside portion (311) of the seat belt cutter (31) is movably
5 mounted in the cutter passage (107). The outside portion (312) of the seat belt
6 cutter (31) abuts on the inclined guide (106) and is flush with the bottom of the
7 body (10). The curved blade (313) is formed in the corner between the inside and
8 the outside portions (311, 312). The spring hole (314) has an edge (not numbered)
9 and is defined in the inside portion (311) to receive the restitution spring (32).
10 The two ends of the restitution spring (32) abut respectively on the edge of the
11 spring hole (314) and the body (10), so the restitution spring (32) will provide a
12 restitution force as it is compressed.

13 Thereafter, when a seat belt (40) needs to be cut, the seat belt (40) is
14 pulled taut on the inclined guide (106) and the seat belt (40) is slid into between
15 the inclined guide (106) and the outside portion (312). The inclined guide (106)
16 smoothens the taut seat belt (40) to be without folds such that the seat belt (40) is
17 in an optimum condition for the curved blade (313) to it. When the operation of
18 cutting the seat belt (40) is completed, the restitution force caused by the
19 restitution spring (32) returns the seat belt cutter (31) and the outside portion
20 (312) abuts on the inclined guide (106) again to be behind the curved blade
21 (313).

22 With reference to Figs. 1 and 3, when the automobile hammer gun is
23 applied to break a side window (50) of a vehicle (not shown), the lever (14) is
24 squeezed toward the grip (101). The inside end of the lever (14) lifts the annular

1 lip (112) into the body (10) such that the striking hammer (11) and the adhesive
2 film cutter (12) will be simultaneously moved inward to retract into the body (10)
3 with a given stroke. Thereafter, the bottom of the body (10) contacts
4 approximately with the side window (50) to serve the striking hammer (11)
5 almost perpendicularly to the side window (50). Continuously squeezing the
6 lever (14) toward the grip (101) makes the lever (14) slide along the stationary
7 pin (142) until the annular lip (112) escapes from the inside end of the lever (14).
8 The compression spring (13) provides a spring force to move outward the
9 striking hammer (11), so the tip (111) rapidly impacts and so breaks the side
10 window (50). Most of all the side windows (50) are composed of a layer of
11 adhesive film (not shown), such as polyester film to adhere different layers of
12 glass together, the triangular blade edge (121) of the adhesive film cutter (12)
13 can cut or break this adhesive film to completely break the side window (50)
14 after the tip (111) of the striking hammer (11) has broken the layers of glass.

15 If in a low visibility situation, the rotatable switch (24) can be turned to
16 retract into the body (10) and press one of the flexible casings of the rotator (21)
17 to actuate the illuminating member (22). Rotation of the adjusting bar (23) can
18 change an angular position of the illuminating member (22) to illuminate either
19 the tip (111) or the seat belt cutter (31) through the bottom recess (14) for
20 operating conveniently them.

21 The automobile escape hammer gun in accordance with the present
22 invention has the aforesaid advantages and overcomes the shortcomings of the
23 conventional automobile escape hammer. The tip (111) of the striking hammer
24 (11) can strike the window almost perpendicularly to the window's surface, so

1 the tip (11) will efficiently break the window. The seat belt (40) is smoothened
2 on the inclined guide (106) to be cut by the curved blade (313), so the seat belt
3 will be conveniently cut.

4 Even though numerous characteristics and advantages of the present
5 invention have been set forth in the foregoing description, together with details
6 of the structure and function of the invention, the disclosure is illustrative only,
7 and changes may be made in detail, especially in matters of shape, size, and
8 arrangement of parts within the scope of the appended claims.